

January 14, 2003

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CRUISE REPORT

VESSEL: *Oscar Elton Sette*, Cruise 02-08 (OES-01)

CRUISE PERIOD:
Leg I: 11-26 November (scheduled)
Leg I: 19-26 November 2002 (actual)
Leg II: 2-13 December

AREAS OF OPERATION: North Pacific, leeward side of Oahu, windward side of Oahu and Maui, lee side of the Island of Hawaii (Kona coast), Jeager Seamount (Fig. 1, Table 1)

ITINERARY:

19 November Departed Pearl Harbor at approximately 1230. On board were Ani Au, Richard Brill, Dan Curran, Gerard DiNardo, Wende Goo, Robert Humphreys, Susan Kamei, Tom Kazama, Robert Moffitt, Mike Musyl, Joe O'Malley, and Mike Seki. Transited to area off the leeward coast of the Island of Oahu. Deployed and retrieved floats to simulate rudimentary longline/lobster gear retrieval and to allow officers to learn handling characteristics of the new ship. Also repeatedly launched and retrieved conductivity-temperature-depth (CTD) in order to check operational characteristics and allow the officers and deck crew to become familiar with the operation of the starboard J-frame.

20 November Deployed plankton net and Issacs-Kidd trawl to test operation of starboard J-frame and the towing characteristics of the ship. Also, repeatedly deployed and retrieved a string of lobster gear to test the ability of ship to successfully perform this operation. Deployed hydrophone "wing" off the port J-frame and ran preliminary tests of this equipment's ability to detect ultrasonic transmitters. Obtained an effective signal at 0.4-0.5 nmi (minimum) on all hydrophones.

- 21 November Deployed hydrophone wing and retested ultrasonic telemetry system. Reconfirmed approximately 0.4-0.5 nmi range on all hydrophones. Had engineers relocate longline reel control station to deck immediately above longline reel so as to allow operator to see the longline and the person removing dropper lines during retrieval. Completed installation of required fairleads down the port companionway and across aft deck to allow mainline to reach shooter. Deployed approximately 1.5 nmi mainline without hooks to practice/test longline procedures on new ship. During haulback, it became apparent that the position of roller gear was unacceptable and unsafe. Returned to Pearl Harbor to purchase additional fairleads necessary for rerouting retrieval path of the mainline from the water to the longline reel, effect repairs to generators, take on freshwater, and pump out sewage. Disembarked all scientists.
- 22 November Purchased necessary fairleads to reroute longline retrieval path and mounted these on port J-frame. Remained in port to complete repairs to the generators.
- 23 November Embarked scientists Rich Brill, Dan Curran, Tom Kazama, and Mike Musyl. Departed Pearl Harbor approximately 1730. Transited to area off leeward coast of Oahu.
- 24 November Practiced deployment and retrieval of longline gear using modified haulback set up. Used weights to simulate fish. Both deployment and retrieval operations went well; transited to area approximately 20 nmi northwest of Oahu. Starting 1700, deployed longline gear (approximately 850 hooks).
- 25 November Commenced longline haulback at approximately 0800. Operations went very well in spite of 15-20 knot winds. Began transit back to Pearl Harbor.
- 26 November Arrived Pearl Harbor, Disembarked scientists. End of Leg I.
- 2 December Departed Pearl Harbor at approximately 1000. On board were Rich Brill, Peter Bushnell, Dan Curran, Steve Evill, Kerstin Fritsches, Nuno Fraguoso, Tom Kazama, Tom Lisney, Lianne Millieux, and Mike Musyl. Proceeded to area northeast of Oahu. Starting approximately 2200, set longline gear.

- 3-5 December Continued longline operations on the windward side of main Hawaiian Islands. On the evening of 5 December, transited to leeward side of the Island of Hawaii (Kona Coast) to avoid the predicted 20-30-knot trade winds.
- 6-11 December Continued longline operations immediately off leeward shore of Island of Hawaii (due to sustained strong trade winds). On 11 December transited to Jeager Seamount (west of the Island of Hawaii) and deployed longline gear there.
- 12 December Began transit to Snug Harbor following retrieval of longline gear.
- 13 December Arrived Snug Harbor. Disembarked scientists. End of cruise.

MISSIONS AND RESULTS:

- A. Confirm suitability of the *Oscar Elton Sette* to: (1) deploy and retrieve longline gear; (2) deploy and retrieve lobster traps; (3) conduct conductivity-temperature-depth (CTD) operations, (4) track fish carrying ultrasonic transmitters; (5) deploy, tow, and retrieve Issacs-Kidd (IK) trawl and plankton nets.

Evan though departure on Leg I was delayed due to mechanical problems, the suitability of the new ship for performing fishing and oceanographic operations was confirmed. A few modifications of the longline deployment and retrieval systems were required, but these were readily accomplished because of excellent cooperation among the deck department, engineering department, officers, and scientists. In two instances, longline gear was retrieved under high wind conditions (15- >30 knots). Ship's officers and crew performed admirably and showed longline operations can be conducted under reasonably adverse conditions, albeit with some risk to the scientists and deck crew working in the port-side "longline pit" due to waves washing into this area.

- B. Capture sharks and other large pelagic fish species for attachment of pop-up satellite archival tags (PSATs).

Made 10 successful longline sets (Tables 1 and 2). Deployed 11 PSATs on sharks or tunas (Table 3).

- C. Collect tissue samples for ongoing physiological, biochemical and anatomical studies of tunas, billfishes, other pelagic teleost species, and sharks.

Took tissue samples from bigeye, yellowfin and skipjack tunas, swordfish, mahimahi, escolar, lancet fish, snake mackerel, blue sharks, and bigeye thresher sharks for ongoing physiological, biochemical, and anatomical studies.

- D. Conduct experiments on vision in tunas and billfishes using isolated retinas and standard physiological techniques.

Conducted detailed studies on the visual capabilities of swordfish, tunas, striped marlin, mahimahi, escolar, lancet fish, snake mackerel, and bigeye thresher sharks using isolated retinas and/or eye lenses.

NARRATIVE SUMMARY:

As this was the first research cruise on the new ship (*Oscar Elton Sette*), mechanical problems were expected. However, in spite of departure on Leg I being delayed by approximately a week, the ability of the new ship to conduct lobster trapping, CTD, fish tracking, and plankton net towing operations were tested and the configuration of the new ship shown to be suitable. In addition, during Leg I initial longline operations were conducted, and minor mechanical problems/deficiencies identified and corrected.

A total of 10 operational longline sets (one on Leg I and nine on Leg II) were conducted during the cruise and 171 fish captured (Tables 1 and 2). Two longline retrieval operations were conducted under adverse conditions (15 - >30 knot winds). The ship was shown to be controllable under these conditions, such that it's course and speed could be maintained so as to allow the revival of the longline gear. At the highest wind speeds and most adverse sea conditions (estimated windwave height 1-3 meters), green water would occasionally wash into the "longline pit", putting the deck crew and scientists working in this area (to retrieve the longline gear and handle the fish be caught) at some risk. Under the worse conditions, tagging operations were suspended and all fish were released at the side of the vessel by cutting the dropper lines. Although this meant that the primary objectives of the cruise could not be met (i.e., attachment of PSATs, collection of tissue samples, etc.), it was still possible to retrieve all the longline gear.

RECORDS:

The following forms, logs, charts, and data records were kept and given to the Honolulu Laboratory upon termination of the cruise. These include all data captured onto computer storage media during the cruise. All the records are filed there unless indicated otherwise in parentheses.

SEAS system data files
 Deck Log-Weather Observation Sheet
 Marine Operations Log (NOAA)
 Project Area and Operations Chartlets
 Station Number and Activity Log
 Special Time and Attendance Report (filed with Admin.)

**SCIENTIFIC
 PERSONNEL:**

Richard W. Brill, Chief Scientist, National Marine Fisheries
 Service (NMFS), Southwest Fisheries Science Center (SWFSC),
 Honolulu Laboratory (HL)
 Ani Au, Librarian, NMFS, SWFSC, HL
 Peter Bushnell, Cooperating Scientist, Indiana University South
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 and Atmospheric Research (JIMAR), University of Hawaii (UH)
 Steven Evill, Cooperating Scientist, University of Queensland
 Nuno Fraguso, Biological Technician, Queen's University
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 Gerard DiNardo, Fishery Biologist, NMFS, SWFSC, HL
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Submitted by:

 Richard W. Brill
 Chief Scientist

Approved by:

 Samuel Pooley
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Attachments

Table 1, Summary of longline set locations

Date	start latitude (N)	start longitude (W)	end latitude (N)	end longitude (W)	approximate number of hooks
24 Nov	21° 47.534	158° 37.428	21° 59.896	158° 46.189	850
2 Dec	21° 43.544	156° 17.618	21° 53.983	156° 16.302	550
3 Dec	22° 02.135	157° 07.464	22 07.534	156° 56.632	480
4 Dec	21° 21.014	156° 03.003	21° 21.049	155° 48.944	550
6 Dec	19° 20.682	156° 09.483	18° 59.518	156° 09.597	850
7 Dec	19° 12.278	156° 11.618	19° 27.254	156° 10.354	550
8 Dec	18° 54.936	156° 14.395	19° 06.580	156° 14.063	550
9 Dec	19° 31.593	156° 19.274	19° 43.180	156° 20.207	550
10 Dec	19° 21.548	156° 07.233	19° 11.472	156°.07.153	580
11 Dec	19° 19.782	157° 04.149	19° 31.781	157° 05.769	580

Table 2 Summary of fish captured during longline operations

Date	Common Name	Species	# Caught
25 Nov	Blue shark	<i>Prionace glauca glauca</i>	6
	Swordfish	<i>Xiphias gladius</i>	2
	Mahimahi	<i>Coryphaena hippurus</i>	2
	Bigeye thresher shark	<i>Alopias superciliosus</i>	1
	Skipjack tuna	<i>Katsuwonus pelamis</i>	1
3 Dec	Snake mackerel	<i>Gempylus serpens</i>	12
	Escolar	<i>Lepidocybium flavobrunneum</i>	4
	Mahimahi	<i>Coryphaena hippurus</i>	6
	Shortfin mako shark	<i>Isurus oxyrinchus</i>	1
	Blue shark	<i>Prionace glauca</i>	1
	Oceanic blaasop*	<i>Lagocephalus inermis</i>	1
	Striped marlin	<i>Tetrapturus audax</i>	1
4 Dec	Snake mackerel	<i>Gempylus serpens</i>	8
	Escolar	<i>Lepidocybium flavobrunneum</i>	13
	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	1
	Blue shark	<i>Prionace glauca</i>	1
	Striped marlin	<i>Tetrapturus audax</i>	1
5 Dec	Snake mackerel	<i>Gempylus serpens</i>	2
	Escolar	<i>Lepidocybium flavobrunneum</i>	8
	Mahimahi	<i>Coryphaena hippurus</i>	1
	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	1
	Yellowfin tuna	<i>Thunnus albacares</i>	1
	Blue shark	<i>Prionace glauca</i>	1
	Skipjack tuna	<i>Katsuwonus pelamis</i>	1
7 Dec	Mahi mahi	<i>Coryphaena hippurus</i>	15
	Blue shark	<i>Prionace glauca</i>	12
	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	3
	Shortbill spearfish	<i>Tetrapturus angustirostris</i>	1
	Barracuda	<i>Sphyrna barracuda</i>	1
	Swordfish	<i>Xiphias gladius</i>	1
8 Dec	Mahimahi	<i>Coryphaena hippurus</i>	7
	Blue shark	<i>Prionace glauca</i>	8
	Oceanic blaasop*	<i>Lagocephalus inermis</i>	1
	Swordfish	<i>Xiphias gladius</i>	1
	Skipjack tuna	<i>Katsuwonus pelamis</i>	1
9 Dec	Longsnout lancetfish	<i>Alepisaurus ferox</i>	2
	Escolar	<i>Lepidocybium flavobrunneum</i>	1
	Mahimahi	<i>Coryphaena hippurus</i>	2
	Blue shark	<i>Prionace glauca</i>	8
	Silky shark	<i>Carcharhinus falciformis</i>	1
10 Dec	Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	1
	Escolar	<i>Lepidocybium flavobrunneum</i>	2
	Bigeye tuna	<i>Thunnus obesus</i>	1
	Mahimahi	<i>Coryphaena hippurus</i>	3
	Bigeye thresher shark	<i>Alopias superciliosus</i>	1
	Blue shark	<i>Prionace glauca</i>	8

Date	Common Name	Species	# Caught
11 Dec	Longsnout lancetfish	<i>Alepisaurus ferox</i>	1
	Blue shark	<i>Prionace glauca</i>	8
	Silky shark	<i>Carcharhinus falciformis</i>	1
	Mahi mahi	<i>Coryphaena hippurus</i>	7
12 Dec	Blue shark	<i>Prionace glauca</i>	7
	Mahi mahi	<i>Coryphaena hippurus</i>	7
	Bigeye tuna	<i>Thunnus obesus</i>	2
	Skipjack tuna	<i>Katsuwonus pelamis</i>	2
	Silky shark	<i>Carcharhinus falciformis</i>	1
	Swordfish	<i>Xiphias gladius</i>	2
	Oceanic blaasop*	<i>Lagocephalus inermis</i>	1
	Escolar	<i>Lepidocybium flavobrunneum</i>	1
	Manta ray	<i>Manta birostris</i>	1
TOTAL			199

CATCH SUMMARY	TOTAL	PERCENT
TUNAS	9	4.5
Bigeye tuna	3	1.5
Skipjack tuna	5	2.5
Yellowfin tuna	1	0.5
BILLFISH	9	4.5
Shortbill spearfish	1	0.5
Striped marlin	2	1.0
Swordfish	6	3.0
SHARKS	72	36.2
Bigeye thresher shark	2	1.0
Blue shark	60	30.2
Oceanic whitetip shark	6	3.0
Shortfin mako shark	1	0.5
Silky shark	3	1.5
OTHER	108	54.3
Escolar	29	14.6
Longsnout lancetfish	3	1.5
Mahimahi	50	25.1
Manta ray	1	0.5
Oceanic blaasop*	3	1.5
Snake mackerel	22	11.1
Barracuda	1	0.5

*Tentative species identification.

Table 3. Species tagged with pop-up satellite tags (PSATs).

SPECIES	Length or weight*	Lat. Degrees	Lat. Min	Lat. Direc.	Long. Degrees	Long. Min	Long. Dir.
short fin mako shark	210 cm	21	46.974	N	156	18.117	W
silk shark	170 cm	19	0.677	N	156	6.221	W
oceanic white-tip shark	ca. 1 m	19	25.318	N	156	4.521	W
oceanic white-tip shark	2 m+	22	4.02	N	157	1.065	W
oceanic white-tip shark	2 m+	21	21.655	N	155	57.037	W
silky shark	140 cm	19	20.15	N	157	5.056	W
oceanic white-tip shark	115 cm	19	27.733	N	156	5.715	W
yellowfin tuna	180 lb	21	21.446	N	155	51.626	W
silky shark	2 m	19	28.014	N	156	3.232	W
bigeye tuna	150 lb	19	55.284	N	156	24.086	W
silky shark	92 cm	19	21.477	N	157	4.633	W

*Fork lengths of sharks were measured when sea conditions and behavior of the animal made it safe to do so, otherwise lengths were estimated. Weights of tunas were estimated.

Figure 1. Longline set locations.

